



United States Department of Commerce  
Technology Administration  
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***NISTIR 5063***

# **A Bibliography of the NIST Electromagnetic Fields Division Publications**

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Ruth Marie Lyons, Editor

August 1997

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Electromagnetic Fields Division  
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Boulder, Colorado 80303-3328

August 1997



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# A BIBLIOGRAPHY OF THE NIST ELECTROMAGNETIC FIELDS DIVISION PUBLICATIONS

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This bibliography lists the publications by the staff of the Electromagnetic Fields Division of the National Institute of Standards and Technology for the period January 1970 through July 1997. It supersedes NISTIR 5050, which listed the publications of the Electromagnetic Fields Division from January 1970 through July 1996. Selected earlier publications from the Division's predecessor organizations are included.

Key words: antennas; dielectric measurements; electromagnetic interference; microwave metrology; microwave power, impedance, attenuation; near-field antenna measurements; noise; nonionizing radiation; radiation hazards; standards; time domain; waveform metrology.

## INTRODUCTION

The Electromagnetic Fields Division was formed during the reorganization of NIST (formerly NBS) in April 1978. Originally, the Division developed measurement methods and standards, and provided metrological support for antenna systems, noise measurement equipment, fast pulse waveforms, electromagnetic interference, electromagnetic environmental characterization equipment, electromagnetic emission and immunity (or susceptibility) testing equipment, and especially for fields near sources or in other complicated field conditions. In April 1985, microwave and millimeter wave metrology was added to the Division.

The attempt has been made to include all work published by the Division staff from January 1970 through July 1997. Work performed by authors before joining this Division or work by authors who have left this Division has been included only when it had special significance. A miscellaneous category includes general publications. A few references are listed in more than one category where appropriate.

Several other information sources may be useful to the reader who is interested in NIST activities connected with electromagnetic metrology. Two companion bibliographies, NISTIR 5064 and NISTIR 5065, list publications of the Electromagnetic Technology Division and the Optoelectronics Division for the same period. Topics include metrology for laser systems, optical fibers, optical communication equipment, cryoelectronics, superconductors, and other unusual electrical engineering materials. Three additional bibliographies list publications of the former Electromagnetics Division: NBSIR 73-320 (July 1972-June 1973); NBSIR 74-395 (July 1973-June 1974); NBSIR 75-818 (July 1974-June 1975). These were preceded by a series of unpublished reports (edited by H. M. Altschuler) that

cover the period back to 1956. An excellent summary of the whole field of electromagnetic metrology as it stood in 1967 was published as a special issue of the Proceedings of the IEEE (volume 55, June 1967). Advances in the following decades were described in two other special issues of the same journal (volume 66, April 1978 and volume 74, January 1986).

### A Note on Abbreviations

On August 23, 1988, the National Bureau of Standards (NBS) became the National Institute of Standards and Technology (NIST); therefore, documents with either prefix are considered NIST publications. Most readers are familiar with the commonly used abbreviations for the names of the professional journals that appear in this bibliography. Some publication series are peculiar to NIST and may call for explanation. They are:

|                                           |                                         |
|-------------------------------------------|-----------------------------------------|
| NISTIR - NIST Interagency/Internal Report | NBSIR - NBS Interagency/Internal Report |
| NIST TN - NIST Technical Note             | NBS Tech. Note - NBS Technical Note     |
| NIST SP - NIST Special Publication        | NBS SP - NBS Special Publication        |
| NIST HB - NIST Handbook                   | NBS HB - NBS Handbook                   |
| NIST JRES - NIST Journal of Research      | NBS JRES - NBS Journal of Research      |
| NIST MN - NIST Monograph                  | NBS MN - NBS Monograph                  |

### Purchase Procedures and Document Availability

NIST (NBS) Technical Notes, Special Publications, Handbooks, Journals of Research, and Monographs may be purchased from the U.S. Government Printing Office (GPO). The GPO website is <http://www.access.gpo.gov/> and the order desk phone number is 202-512-1800. For a GPO bookstore near you use the following website address [http://www.access.gpo.gov/su\\_docs/sale/abkst001.html](http://www.access.gpo.gov/su_docs/sale/abkst001.html). The Government Printing Office usually stocks these publications for only a year or two, after which they may be purchased from the National Technical Information Service whose website for information and ordering is at <http://www.ntis.gov/>.

Reprints of papers published in non-NIST media may be available in limited quantities from the authors.

## ANTENNAS

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Uncertainty Analysis for NRaD Radar Cross Section Measurements

NISTIR 5061

April 1997

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International Intercomparison of Horn Gain at X-Band

IEEE Trans. Antennas Propagat., Vol. 44, No. 10, pp. 1367-1374

October 1996

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Mismatch Errors in Insertion-Loss Measurements Using Harmonic Mixers

Proc., Antenna Meas. Tech. Assoc. Symp., 30 Sept.-4 Oct. 1996, Seattle, WA, pp. 377-382

September 1996

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Radar Cross Section Range Characterization

Proc., Antenna Meas. Tech. Assoc. Symp., 30 Sept.-4 Oct. 1996, Seattle, WA, pp. 267-278

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Phaseless Measurements of Antenna Near Fields Employing Holographic Phase Retrieval

Proc., Antenna Meas. Tech. Assoc. Symp., 30 Sept.-4 Oct. 1996, Seattle, WA, pp. 20-24

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C. F.; MACREYNOLDS, K.**

Antenna Near Field Phase Data from Infrared Thermograms by Fourier Iterative Plane-to-Plane  
Techniques

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September 1996

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Planar Near-Field Antenna Measurements Using Non-Ideal Measurement Locations

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Antenna/RCS Range Evaluation Using a Spherical Synthetic-Aperture Radar

Proc., Antenna Meas. Tech. Assoc. Symp., 30 Sept.-4 Oct. 1996, Seattle, WA, pp. 406-410

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Near-Field to Far-Field Antenna Pattern Measurements Using Infrared Imaging and Fourier Interactive Plane-to-Plane Techniques

Proc., 6th Dual-Use Technol. and Apps. Conf., 4-6 June 1996; Syracuse, NY; pp. 266-271  
June 1996

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Phase Measurements of Electromagnetic Fields Using Infrared Imaging Techniques and Microwave Holography

Proc., 10th Intl. AeroSense Symp., 8-12 April 1996; Orlando, FL; Vol. 2766, pp. 323-333  
April 1996

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Comparison of Ultralow-Sidelobe Antenna Far-Field Patterns Using the Planar Near-Field Method and the Far-Field Method

IEEE Antennas and Propagat. Magazine, Vol. 37, No. 6, pp. 7-15  
December 1995

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A Comparison of K-Correction and Taylor-Series Correction for Probe-Position Errors in Planar Near-Field Scanning

Proc., Antenna Meas. Tech. Assoc. Symp., 13-17 November 1995, Williamsburg, VA,  
pp. 331-340  
November 1995

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Planar Near-Field Measurements and Microwave Holography for Measuring Aperture Distribution on a 60 GHz Active Array Antenna

Proc., Antenna Meas. Tech. Assoc. Symp., 13-17 November 1995, Williamsburg, VA,  
pp. 295-300  
November 1995

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Polarimetric Calibration of Reciprocal-Antenna Radars

Proc., Antenna Meas. Tech. Assoc. Symp., 13-17 November 1995, Williamsburg, VA, pp. 3-8  
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Spherical-Wave Source-Scattering Matrix Analysis of Antennas and Antenna-Antenna Interactions  
NIST TN 1373

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NISTIR 5033

March 1995

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RangeCAD and the NIST RCS Uncertainty Analysis

NISTIR 5022

December 1994

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A Dual-Frequency Millimeter-Wave Radiometer Antenna for Airborne Remote Sensing of Atmosphere and Ocean

Proc., Antenna Meas. Tech. Assoc. Symp., 3-7 October, 1994 Long Beach, CA, pp. 3-9  
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Microwave J., pp. 24-38  
September 1994

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Proc., MIKON '94 Microwave Conf. 30 May-2 June 1994, Książ, Poland, pp. 298-302  
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Planar Near-Field Measurements of Low-Sidelobe Antennas

NIST JRES, Vol. 99, No. 2, pp. 143-167  
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Proposed Uncertainty Analysis for RCS Measurements

NISTIR 5019  
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Proc., Antenna Meas. Tech. Assoc. Symp., 4-8 October 1993, Dallas, TX, pp. 198-204  
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NISTIR 5007

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Lecture Notes, Antenna Measurement Tech. Assoc. Workshop on Communication Satellite  
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Proc., Antenna Meas. Tech. Assoc. Symp., 19-23 October 1992, Columbus, OH, pp. 10-17  
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NISTIR 3981

October 1992

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NIST JRES, Vol. 97, No. 2, pp. 273-297

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NIST JRES, Vol. 96, No. 4, pp. 391-410

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NISTIR 3970

June 1991

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Proc., IEEE Instrum. Meas. Technol. Conf., 14-16 May 1991, Atlanta, GA, pp. 573-579

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IEEE Trans. Antennas Propagat., Vol. 38, No. 12, pp. 1925-1932

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Evaluation of Dual-Port Circularly Polarized Probes for Planar Near-Field Measurements

Proc., Antenna Meas. Tech. Assoc. Symp., 8-11 October 1990, Philadelphia, PA, pp. 13-3 through 13-8

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Proc., Antenna Meas. Tech. Assoc. Symp., 8-11 October 1990, Philadelphia, PA, pp. 13-27  
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NISTIR 89-3924  
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Antenna Far-Field Pattern Accuracies at Millimeter Wave Frequencies Using the Planar Near-Field Technique  
Proc., Antenna Meas. Tech. Assoc. Symp., 9-13 October 1989, Monterey, CA, pp. 11-16  
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October 1989

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Automated Multi-Axis Motor Controller and Data Acquisition System for Near-Field Scanners  
Proc., Antenna Meas. Tech. Assoc. Symp., 9-13 October 1989, Monterey, CA, pp. 12-24  
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Proc., Antenna Meas. Tech. Assoc. Symp. 9-13 October 1989, Monterey, CA, pp. 13-7 through  
13-11.  
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Planar Near-Field Codes for Personal Computers  
NISTIR 89-3929  
October 1989

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Proc., Antenna Meas. Tech. Assoc. Symp., 9-13 October 1989, Monterey, CA, pp. 1-24 through  
1-29  
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Proc., Antenna Meas. Tech. Assoc. Symp., 9-13 October 1989, Monterey, CA, pp. 1-30 through 1-36

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An Iterative Technique to Correct Probe Position Errors in Planar Near-Field to Far-Field Transformations

Proc., 1989 Intl. Symp. on Antennas and Propagat., 22-25 August 1989, Nagoya, Japan, pp. 901-904

August 1989

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Review for Antenna Propagat. Soc. Newsletter, Vol. 31, No. 3, pp. 35-36

June 1989

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NISTTN 1323

October 1988

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Antenna Measurements for Millimeter Waves at the National Bureau of Standards

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Antenna Calibrating Standards Using CW and Pulsed-CW Measurements and the Planar Near-Field Method

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NBSIR 87-3081

August 1988

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IEEE Trans. Antennas Propagat., Vol. 36, No. 8, pp. 1078-1087

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A Brief History of Near-Field Measurements of Antennas at the National Bureau of Standards

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Efficient and Accurate Method for Calculating and Representing Power Density in the Near Zone of Microwave Antennas

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Effect of Random Errors in Planar Near-Field Measurement

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June 1988

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Improved Polarization Measurements Using a Modified Three Antenna Technique

IEEE Trans. Antennas Propagat., Spec. Issue on Near-Field Scanning Technology, Vol. 36, No. 6, pp. 852-854

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IEEE Trans. Antennas Propagat., Vol. AP-35, No. 12, pp. 1375-1380

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Out-of-Band Response of Antenna Arrays  
IEEE Trans. Electromagn. Compat., Vol. EMC-29, No. 4, pp. 282-288  
November 1987

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Out-of-Band Response of Array Antennas  
Proc., Antenna Meas. Tech. Assoc., 28 September-2 October 1987, Seattle, WA, pp. 14-19  
September 1987

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Proc., Antenna Meas. Tech. Assoc., 28 September-2 October 1987, Seattle, WA, pp. 25-29  
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NBS TN 1311  
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Coupling Between Two Antennas Separated by a Planar Interface  
IEEE Trans. Geosci. Remote Sensing, Vol. GE-25, No. 4, pp. 422-431  
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**DAYWITT, W. C.**

A Simple Technique for Determining Joint Losses on a Coaxial Line from Swept-Frequency Reflection Data  
IEEE Trans. Instrum. Meas., Vol. IM-36, pp. 468-473  
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**FITZGERRELL, R. G.**

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